the calibration information needed for presentation of said mixed reality is derived in said derivation mode and mixed reality is presented using the calibration information in said presentation mode.

23. (Amended) A computer-readable storage medium which stores the program code for executing the information processing method performed using the apparatus of claim 21.

24. (Unamended) A computer-readable storage medium which stores the program code for executing the mixed reality presentation method according to claim 22.

REMARKS

Applicants request favorable reconsideration and allowance of this application in view of the foregoing amendments and the following remarks.

Claims 1-24 are pending in this application, with Claims 1 and 21 being independent.

Claims 1, 4-7, 21, 22, and 23 have been amended. Applicants submit that support for the amendments can be found in the original disclosure, and therefore no new matter has been added.

The drawings were objected to under 37 C.F.R. 1.84 (o) which requires legends on drawings. Specifically, the Examiner objected to Figures 1-4, 7B, 12, 14, 18 and 19. Applicants are submitting concurrently herewith a Request for Approval of Drawing

Amendments in which legends have been added to those figures in view of the Examiner's comments. Favorable consideration and withdrawal of the objection are sought.

Claims 1-24 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Application No. 6,285,959 (Greer) in view of U.S. Patent No. 6,124,825 (Eschenbach). Applicants respectfully traverse that rejection for the reasons discussed below.

As recited in independent Claims 1 and 21, the present invention includes, *inter alia*, the features of an input unit adapted to enter information about a match between the position and/or attitude of a real image of a measuring object and a position and/or attitude of a virtual image of the measuring object; an acquisition unit adapted to acquire the output values from the position and/or attitude sensor according to the input by said input unit; and an operation unit adapted to derive calibration information, based on the predetermined position and/or attitude and the output values of the position and/or attitude sensor acquired by said acquisition unit. Thus, according to those claims calibration of a sensor is performed using a specific configuration for mixed reality, wherein a virtual image of an object to be measured and a real image of it are used for calibration. Applicants submit that the cited art fails to disclose or suggest the above-mentioned combination of features.

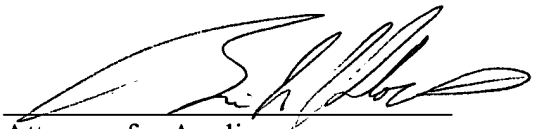
Greer discloses calibration of a sensor, but that patent is silent about using a sensor for a mixed reality display device, particularly one where calibration information is determined as recited in Claims 1 and 21. The other cited art fails to remedy the deficiencies of Greer. Accordingly, Applicants submit that the present invention recited in Claims 1 and 21 is patentable over the cited art, whether that art is taken individually or considered in combination.

The dependent claims incorporate the features of Claims 1 and 21 and are patentable for the reasons discussed above as well as for the additional features they recite.

For the foregoing reasons, Applicants submit that this application is in condition for allowance. Favorable reconsideration, withdrawal of the rejection and objection set forth in the above-mentioned Office Action, and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, DC office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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APPENDIX

MARKED-UP VERSION SHOWING AMENDMENTS TO CLAIMS

1. (Amended) An information processing apparatus that derives the calibration information needed to measure the position and/or attitude of a measuring object based on the output values of a position and/or attitude sensor which is used by a mixed reality display device, comprising:

an input [means for entering] unit adapted to enter information about a match between the position and/or attitude of [said measuring object and a predetermined position and/or attitude] a real image of a measuring object and a position and/or attitude of a virtual image of the measuring object;

an acquisition [means for acquiring] unit adapted to acquire the output values from [said] the position and/or attitude sensor according to the input by said input [means] unit; and

an operation [means for deriving said] unit adapted to derive the calibration information, based on [said] the predetermined position and/or attitude and the output values of [said] the position and/or attitude sensor acquired by said acquisition [means] unit.

4. (Amended) The information processing apparatus according to claim 2, wherein:

the measurement of said position and/or attitude is measurement of position and attitude, and said sensor is a position and attitude sensor; and

said operation [means] unit performs the process of determining attitude information among said first coordinate transformation information and position information among said second coordinate transformation information.

5. (Amended) The information processing apparatus according to claim 2, wherein:

the measurement of said position and/or attitude is measurement of only attitude, and said sensor is an attitude sensor; and

said operation [means] unit performs the process of determining pitch-angle and roll-angle information among said first coordinate transformation information and yaw-angle information among said second coordinate transformation information.

6. (Amended) The information processing apparatus according to claim 2, wherein:

the measurement of said position and/or attitude is measurement of only attitude, and said sensor is an attitude sensor; and

said operation [means] unit performs the process of determining yaw-angle information among said second coordinate transformation information.

7. (Amended) The information processing apparatus according to claim 1, wherein said measuring [means] object is a magnetic sensor.

21. (Amended) An information processing apparatus that derives the calibration information needed to measure the position and/or attitude of a measuring object based on the output values of a position and/or attitude sensor which is used by a mixed reality display device, comprising:

an input [means for entering] unit adapted to enter information about a match between the position and/or attitude of [said measuring object and a predetermined position and/or attitude] a real image of a measuring object and a position and/or attitude of a virtual image of the measuring object;

an acquisition [means for acquiring] unit adapted to acquire the output values from [said] the position and/or attitude sensor according to the input by said input [means] unit; and

an operation [means for deriving said] unit adapted to derive the calibration information, based on [said] the predetermined position and/or attitude and the output values of [said] the position and/or attitude sensor acquired by said acquisition [means] unit.

22. (Amended) A mixed reality presentation method which displays virtual space superimposed over a picture of captured real space on a display screen or display

virtual space superimposed over the real space transmitted optically through a display screen, based on the output values of a position and/or attitude sensor, comprising:

an information processing method [according to] performed using the apparatus of claim 21; and

switching process of switching between presentation mode that presents mixed reality and derivation mode that derives calibration information; wherein

the calibration information needed for presentation of said mixed reality is derived in said derivation mode and mixed reality is presented using the calibration information in said presentation mode.

23. (Amended) A computer-readable storage medium which stores the program code for executing the information processing method [according to] performed using the apparatus of claim 21.

APPENDIX

MARKED-UP VERSION SHOWING AMENDMENTS TO SPECIFICATION

The paragraph at page 2, lines 3-11 has been amended as follows.

--MR includes video see-through mode that involves superimposing a picture of virtual space (for example, virtual objects drawn by computer graphics (hereinafter abbreviated to CG) or text information) over a picture of captured real space captured by an imaging apparatus such as a video camera, and optical see-through mode that involves superimposing a picture of virtual space over a picture of the real space transmitted optically through a display screen.--

The paragraph at page 2, lines 12-18 has been amended as follows.

--MR is expected to find applications in medical aids which will show the inside of the patient's body to the surgeon as if it were [seen through] transparent, applications in work aids which will show assembly procedures of a product superimposed over the actual objects in a factory, and other applications totally different in quality from those of conventional VR.--